

Translation

PATENT COOPERATION TREATY

PCT/JP2003/007676



PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference PF-3165	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/JP2003/007676	International filing date (day/month/year) 17 June 2003 (17.06.2003)	Priority date (day/month/year) 17 June 2002 (17.06.2002)
International Patent Classification (IPC) or national classification and IPC H01L 29/47, 29/872, 21/338, 29/812, 29/778		
Applicant NEC CORPORATION		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets, including this cover sheet. <input checked="" type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>17</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input type="checkbox"/> Non-establishment of opinion with regard to novelty, inventive step and industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input checked="" type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 17 June 2003 (17.06.2003)	Date of completion of this report 03 March 2004 (03.03.2004)
Name and mailing address of the IPEA/JP Facsimile No.	Authorized officer Telephone No.

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I. Basis of the report

1. With regard to the elements of the international application:*

- ☐ the international application as originally filed
- ☒ the description:
 pages 1-32, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☒ the claims:
 pages _____, as originally filed
 pages _____, as amended (together with any statement under Article 19
 pages _____, filed with the demand
 pages 36-89, filed with the letter of 12 November 2003 (12.11.2003)
- ☒ the drawings:
 pages 1-15, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____
- ☐ the sequence listing part of the description:
 pages _____, as originally filed
 pages _____, filed with the demand
 pages _____, filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item. These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☐ the description, pages _____
- ☒ the claims, Nos. 1-35
- ☐ the drawings, sheets/fig _____

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

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V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	36-89	YES
	Claims		NO
Inventive step (IS)	Claims	36-89	YES
	Claims		NO
Industrial applicability (IA)	Claims	36-89	YES
	Claims		NO

2. Citations and explanations

Document 1: JP 2001-156081 A (Matsushita Electronics Industry Corporation), 8 June 2001

Document 2: JP 2000-277724 A (President of Nagoya Institute of Technology et al.), 6 October 2000

Document 3: JP 11-354817 A (Furukawa Electric Co., Ltd.), 24 December 1999

Document 4: T. Egawa et al., Recessed gate AlGa_N/Ga_N modulation-doped field-effect transistors on sapphire, Appl. Phys. Lett., 3 January 2000, Vol. 76, No. 1, pages 121 to 123

Document 5: Takashi Egawa et al., Characteristics of a Ga_N Metal Semiconductor Field-Effect Transistor Grown on a Sapphire Substrate by Metalorganic Chemical Vapor Deposition, Jpn. J. Appl. Phys., April 1999, Vol. 38, Part 1, No. 4B, pages 2630 to 2633

Claims 36 to 89

The Schottky junction metal layer with a two-layer structure or a three-layer structure which constitutes the invention described in claims 36 to 89 is not disclosed in any of the documents cited in the international search report, and would not be obvious to a person skilled in

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the art.

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VI. Certain documents cited

1. Certain published documents (Rule 70.10)

Application No. Patent No.	Publication date (day/month/year)	Filing date (day/month/year)	Priority date (valid claim) (day/month/year)
JP 2003-209124	25 July 2003 (25.07.2003)	17 December 2001 (17.12.2001)	06 November 2001 (06.11.2001)

[EX]

2. Non-written disclosures (Rule 70.9)

Kind of non-written disclosure

Date of non-written disclosure
(day/month/year)

Date of written disclosure
referring to non-written disclosure
(day/month/year)